



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE	
<u>In re application of:</u> Toshiharu Furukawa	<u>Filed:</u> 01/07/2004
	<u>Examiner:</u> Shouxiang Hu
<u>Serial No.</u> 10/707,726	<u>Group Art Unit:</u> 2811
<u>Title:</u> Vertical Carbon Nanotube Field Effect Transistor	<u>Docket #:</u> FIS920030316US1

**DECLARATION UNDER 37 C.F.R. §1.132**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

I, Toshiharu Furukawa, hereby declare that:

1. I have a Ph.D. degree in Solid State Science
2. I am experienced in the field of semiconductor processing and am very knowledgeable about semiconductor applications and related processes and about the skill those working in the art.
3. Since 1983 I have been employed at IBM Microelectronics Division in the field of semiconductor processing.
4. I have read and understood the above-referenced patent application and its prosecution in the U.S. Patent and Trademark Office.
5. I have read and understood the Roesner reference cited by the Examiner in the prosecution of the referenced patent application.
6. The Examiner's statements in the section of the Action of June 27, 2005 dealing with the rejections under 35 USC 112 are incorrect:

In particular, the Examiner's statement on page 2 of the Action that "the disclosure lacks an adequate description regarding what is the recited chemical constituent; how it is introduced into the recited nanotube's bottom or top

section inside the recited aperture and how such process steps could be controllable" contains a number of misstatements of fact.

7. The chemical constituents to dope a carbon nanotube are known to persons skilled in the art, i.e.: any elements that the process designer finds convenient to define a metallic region; and any elements such as oxygen or potassium to define the channel that the process designer finds convenient.

8. The method of introducing these elements into the nanotube's, e.g. to the top section inside the recited aperture is also known to persons skilled in the art; i.e. by exposing the top of the nanotube to oxygen or potassium at the end of the nanotube formation process.

9. The CVD process has been known in the art of semiconductor fabrication for more than thirty years.

10. Controlling CVD processes is also known to those skilled in the art, e.g. changing the flow rates of precursor gases, and/or changing the temperature of the wafer, as is convenient.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-identified application or any patent issued thereon.

by:



Toshiharu Furukawa

Dated: 9/27/2005